

# A Survey on ChatGPT: AI-Generated Contents, Challenges, and Solutions

*Year: 2023 | Citations: 222 | Authors: Yuntao Wang, Yanghe Pan, Miao Yan*

---

## Abstract

With the widespread use of large artificial intelligence (AI) models such as ChatGPT, AI-generated content (AIGC) has garnered increasing attention and is leading a paradigm shift in content creation and knowledge representation. AIGC uses generative large AI algorithms to assist or replace humans in creating massive, high-quality, and human-like content at a faster pace and lower cost, based on user-provided prompts. Despite the recent significant progress in AIGC, security, privacy, ethical, and legal challenges still need to be addressed. This paper presents an in-depth survey of working principles, security and privacy threats, state-of-the-art solutions, and future challenges of the AIGC paradigm. Specifically, we first explore the enabling technologies, general architecture of AIGC, and discuss its working modes and key characteristics. Then, we investigate the taxonomy of security and privacy threats to AIGC and highlight the ethical and societal implications of GPT and AIGC technologies. Furthermore, we review the state-of-the-art AIGC watermarking approaches for regulatable AIGC paradigms regarding the AIGC model and its produced content. Finally, we identify future challenges and open research directions related to AIGC.